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ATR 4018
145

Revised IND/STA

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Technical Standards Committees
(Electric)

Full

Supplement No. 3, April 1982, to
REA Bulletin 43-5
LIST OF MATERIALS ACCEPTABLE FOR USE ON
SYSTEMS OF REA ELECTRIFICATION BORROWERS

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of January through March 1982. The following changes should be made in order to keep it up to date. Pages with a colon between are on the same sheet, both being changed.

26.03

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| an-2.1 | an-2.1 | | |
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| an(2.1) | an(2.1) | | |
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| be-1 | be-1 | | |
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| cg-1 | cg-1 | | |
| cg-2 | cg-2 | | |
| cp | cp | | |
| cu | cu | | |
| cy-1 | cy-1 | | |
| ea-1 | ea-1 | | |
| gw-1 | gw-1 | | |
| gw-2 | gw-2 | | |
| gy-1:gy-2 | gy-1:gy-2 | | |
| U fz-1 | U fz-1 | | |
| U gk(1.2) | U gk(1.2) | | |
| U gk(2) | U gk(2) | | |
| U hb(1.2) | U hb(1.2) | | |
| U he(1.1) | U he(1.1) | | |

1861

j
July 1981

j - Screw, lag

Applicable Specifications: Edison Electric Institute
Specification TDJ-3 1964,
"Standards for Lag Screws"

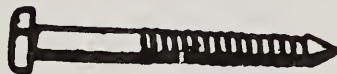
Applicable Sizes : 1/2 inch diameter, 4 inch length
1/2 inch diameter, 5 inch length
5/8 inch diameter, 4 inch length
5/8 inch diameter, 5 inch length

The following manufacturers have shown compliance with the applicable specifications for lag screws:

A. B. Chance Company
Dixie Electrical Manufacturing Company

Joslyn Manufacturing and Supply Company
Kortick Manufacturing Company
McGraw-Edison

Utilities Service Company



k-1
April 1982

k - Insulators, suspension

| ANSI Class Type | 52-9 Clevis | 52-1 Clevis | 52-4 Clevis | 52-3 Ball & Socket |
|------------------------|-------------------|----------------|-------------------------|-------------------------|
| Disc Diameter | 4 $\frac{1}{4}$ " | 6" | 9" or 9 $\frac{1}{2}$ " | 9" or 9 $\frac{1}{2}$ " |
| M & E Rating, lbs. | 10,000 | 10,000 | 15,000 | 15,000 |
| Leakage, inches | 6-3/4 | 7 | 11 $\frac{1}{2}$ | 11 $\frac{1}{2}$ |
| Flashover; kV: Dry-Wet | 60 - 30 | 60 - 30 | 80 - 50 | 80 - 50 |
| NOTES | (3)(4)(6) | (3)(4) | (5) | (2) |

Manufacturer

Catalog Number

| | | | | |
|-------------------------|-----------|---------------|--------|--------|
| Chance | C907-1210 | C907-1001 (6) | - | - |
| Brown Boveri Elec.(ITE) | 877 | 804 (6) | - | - |
| Joslyn (Pinco) | L1814 | L1510 | L-970 | L-960 |
| Lapp | 6815-G70 | 6605 | 9100 | 9000 |
| Locke | 16044 | 16583 | 15S410 | 15S409 |
| Ohio Brass | 42399 | 32433 | 48019 | 48008 |
| Porcelain Prod. (Knox) | 20034 | 86012 | - | - |
| Sediver | CT-4R2 | - | - | - |

Notes:

- (2) To be used only on transmission lines.
- (3) To be used only on distribution lines.
- (4) Use two insulators for 7.2/12.5 kV deadends and three insulators for 14.4/24.9 kV deadends.
- (5) Use two insulators for 14.4/24.9 kV deadends.
- (6) Either malleable iron, steel or aluminum hardware is acceptable.

k - Insulator, Distribution Deadend

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|-------------------------|---------------------------------|--|
| <u>Chance</u> | | |
| Distribution deadend | 965 | For the purpose of gaining operating experience as follows: 1. For distribution lines only. 2. Recommended maximum working load is 5,000 lbs. 3. Not recommended for use in areas subject to contamination. |
| Catalog No. C654-0000 | 4/22/71 | |
| "Epoxilator II" | | |
| (15 kV line-to-line) | 1082 | |
| Catalog No. C654-2500 | 1/22/76 | |
| "Epoxilator II" | 1129 | |
| (25 kV line-to-line) | 12/15/77 | |
| <u>Joslyn</u> | | |
| Distribution deadend | 1074 | 1. For distribution lines only, up to 15 kV line-to-line voltage. |
| UDI 671-3002 | 9/25/75 | |
| | 1088 | |
| | 4/15/76 | |
| Distribution deadend | 1074 | 1. For distribution lines only, up to 25 kV line-to-line voltage. |
| UDI 671-3010 | 9/25/75 | |
| | 1088 | |
| | 4/15/76 | |
| <u>Plastigage</u> | | |
| Distribution deadend | 1158 | To obtain experience. |
| H-15 kV-4 | 3/1/79 | |
| H-25 kV-6 | 1208 | |
| | 3/19/81 | |
| <u>Salisbury</u> | | |
| Distribution deadend | 1226 | 1. For distribution lines only. 2. To be used only in a horizontal position on deadends. 3. Recommended maximum working load is 5,000 lbs. 4. Not recommended for use in areas subject to contamination. |
| Catalog No. 9501, 15 kV | 1/7/82 | |
| Catalog No. 9502, 25 kV | | |
| | | |

1-1
April 1982

1 - Clamp, deadend

DISTRIBUTION

| Copper 2 through 6 CWC 4A through 8A | | ACSR | | | |
|---|-----------------------------------|------------------|------------------|------------------|------------------|
| | | 4/0 & 3/0 | 2/0 | 1/0 | 2 & 4 |
| - | ALCOA | 302** | 302** | 302** | 302** |
| - | American Connector Engineering | QDA-63** | QDA-53** | QDA-53** | QDA-53** |
| MD-52-N | Anderson/Sq.D | PG57N** | PG57** | PG-46N** | PG-46N** |
| - | Bethea/National | DA-20N** | DA-15-N** | DA-15-N** | DA-15-N** |
| - | Continental | AQD-63** | AQD-52** | AQD-52** | AQD-52** |
| - | C & R | CR-20-90** | CR-10-90** | CR-10-90** | CR-10-90** |
| 2111 | Joslyn (Brewer-Titchener) | 5011 5210** | 2116 - | 2116 - | 2107* 2115 |
| 2111 | Knox | 5011 5210** | 2116 - | 2116 - | 2107* 2115 |
| - | Lapp | 306120N** | 306118N** | 306118N** | 306118N** |
| 80500 | Ohio Brass | 80442 89237** | 78500 86534** | 88500 86534** | 81500 86534** |

*Clamp furnished with liner--does not require tape.

**Aluminum clamp--does not require liner or tape.

1 - Deadend for Steel Strand (Overhead Ground Wire)

TRANSMISSION

For High Strength Steel Strand and Aluminum-Clad Steel Strand

Clamp Type

| <u>High Strength Steel</u> | | <u>Aluminum-Clad Steel</u> | | |
|----------------------------|--|----------------------------|--------------------|--------------------|
| <u>Manufacturer</u> | <u>3/8" and 7/16"</u> | <u>7 No. 9 AWG</u> | <u>7 No. 8 AWG</u> | <u>7 No. 7 AWG</u> |
| Anderson/Sq. D | SWDE-55N | | | |
| Bethea/National | FD-550-N (For use on 3/8" steel strand only) | | | |
| Ohio Brass | 80437 | | | |

1 - Deadend for steel strand (overhead ground wire)

TRANSMISSION

For high strength, extra high strength steel strand and aluminum clad steel strand

Compression Type

| <u>Manufacturer</u> | <u>High strength steel</u> | | <u>Aluminum-clad steel</u> | | <u>Extra High Strength</u> | |
|---------------------|----------------------------|--------------|----------------------------|--------------------|----------------------------|-------------|
| | <u>3/8"</u> | <u>7/16"</u> | <u>7 No. 9 AWG</u> | <u>7 No. 8 AWG</u> | <u>5/16"</u> | <u>3/8"</u> |
| Fargo (Alcan) | 82S712 | 82S714 | 82A79 | 82A78 | 82S710 | 82S712 |
| Alcoa | 4620.12 | 4627.14 | | | | |
| Burndy | YTW375E | YTW438E | YTW7M9T | YTW7M8T | | 82S714 |

Somerset
Order by wire size
and type.

Formed Type

| | | | |
|--------------------|--|-------------|-----------|
| Chance | | 16M AWSBG | 20M AWSBG |
| Helical Line Prod. | | HG523-12.5M | HG525-16M |
| | | | HG528-20M |

Automatic Type

| | | | | | | | |
|----------|---------|---------|---------|---------|---------|---------|---------|
| Fargo | GDE-302 | GDE-303 | GDE-302 | GDE-303 | GDE-301 | GDE-302 | GDE-303 |
| Reliable | 5202 | 5203 | 5202 | 5202 | | | |

p - Connectors, Compression

DISTRIBUTION

| | <u>Aluminum to aluminum</u> | <u>Aluminum to copper</u> | <u>Copper to copper</u> | <u>Tap connections (Al to Al, Al to Cu)</u> |
|-------------------------|---------------------------------|-------------------------------|-----------------------------|---|
| Anderson/Sq. D | AC Series | AC Series | VCUC | VCP |
| ITT Blackburn | Type WR | Type WR | Type CF | Type WR |
| Burndy | "Hycrimp" | "Hycrimp" | "Crimpfit" | "Cabelok Crimpfit" |
| Electrical Specialty | "Squeeze Conn" (Type S) | "Squeeze Conn" (Type S) | - | - |
| Kearney | "Squeezon" (Aluminum) | "Squeezon" (Aluminum) | "Squeezon" (Copper) | "Squeezon" (Aluminum) |
| Penn-Union | "Press-On" (Aluminum) | "Press-On" (Aluminum) | "Press-On" (Copper) | "Penn-L-Tap" |
| Somerset/Homac | H Tap-OB&DB | H Tap-OB&DB | - | H Tap-OB&DB |

p-11
July 1981

p - Connectors, Compression

SERVICE

| | <u>Aluminum-to-Aluminum</u> <u>Aluminum-to-Copper</u> | <u>Copper-to-Copper</u> |
|----------------------|--|-------------------------|
| Alcoa | "SECS" | - |
| Anderson/Sq. D | Versa-Crimp (VCSE) | VCCS |
| ITT Blackburn | CS, KL | - |
| Burndy | "Linkits" | YDS-C, YDS-W |
| Electrical Specialty | VSE | - |
| Kearney | "Serv-ens" | - |
| National Tel. Supply | "Nicopress" | - |
| Penn-Union | "Penn Sleeves" | - |
| Somerset/Homac | "Shure Splicers" | - |

These connectors are furnished in a variety of sizes to fit all combinations of aluminum and copper service wire.

April 1982

z - Anchors, Power-installed screw

Manufacturer: Dixie Electrical Manufacturing Company
Multi-Helix Screw Anchors

| Working Load Categories | | | | |
|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| Soil Type | 35,600 N (8,000 lb.) | 53,400 N (12,000 lb.) | 71,000 N (16,000 lb.) | 89,000 N (20,000 lb.) |
| A ₁ Soil | D-6632 | D-6632 | D-6636 | D-6636 |
| Class 2 | D-6636 | D-6636 | D-6637 | D-6637 |
| A ₂ Soil | D-6637 | D-6637 | D-6638 | D-6638 |
| Class 3 | D-6632 | D-6632 | D-6636 | D-6637 |
| B Soil | D-6636 | D-6636 | D-6637 | D-6638 |
| Classes 4 & 5 | D-6637 | D-6637 | D-6638 | |
| C Soil | D-6632 | D-6636 | D-6636 | D-6638 |
| Classes 6 & 7 | D-6636 | D-6637 | D-6637 | |
| | D-6637 | | D-6638 | |

- NOTES: 1. See REA Specification T-10 for definitions and explanations.
2. Anchors in the 53,400 N (12,000 lb.) category or above for use on wood poles must be used with hardware commensurate with the working load. Hardware may provide for either single or multiple guy attachments to the anchor.
3. Anchors listed in a specific working load category and/or soil class may generally be used at lower working load categories and/or lower numerical soil classes.

Conditional List

z
July 1981

z - Anchors

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|-----------------------|
| <u>Chance</u> | | |
| Screw anchors, power- installed | | |
| 11B1 (6,000 & 8,000 lb., 5/8" rod) | 692 6/2/60 | To obtain experience. |
| 13C1 (10,000 & 12,000 lb., 3/4" rod) | | |
| <u>Dixie</u> | | |
| Screw anchors, power- installed | 859 2/9/67 | To obtain experience. |
| D-1162-G (6,000 & 8,000 lb., 5/8" rod) | | |
| D-1375-G (10,000 & 12,000 lb., 3/4" rod) | | |
| <u>Joslyn</u> | | |
| Screw anchors, power- installed | 973 8/19/71 | To obtain experience. |
| J11b CA (6,000 & 8,000 lb., 5/8" rod) | | |
| J13C CA (10,000 & 12,000 lb., 3/4" rod) | | |
| <u>McGraw-Edison</u> | | |
| Screw anchors, power- installed | 992 5/25/72 | To obtain experience. |
| DALLG621 (6,000 & 8,000 lb., 5/8" rod) | | |
| <u>Foresight</u> | | |
| Duckbill Service Anchor | 1202 | To obtain experience. |
| #250 (2500 lbs., 5/8" rod) | 12/18/80 | |
| Duckbill Anchor | | |
| #400 (6000 & 8000 lbs., 3/4" rod) | | |
| #800 (10,000 & 12,000 lbs., 1" rod) | | |

NOTES: Where galvanized anchors are listed, the same anchors ungalvanized (black asphalt coated) are also acceptable.

Catalog numbers shown are for anchors with 1-3/8" hubs. Equivalent anchors with 1-1/2" hubs are also acceptable. (A special installing wrench is required.)

ae - Surge Arrester, Substation*

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|----------------------|
| <u>General Electric</u> | | |
| Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV | 1164 5/24/79 | To obtain experience |
| Surge arrester, intermediate class, metal oxide type, Tranquell, 3 kV thru 120 kV | 1197 10/9/80 | To obtain experience |
| <u>Ohio Brass</u> | | |
| Surge arrester, station class, metal oxide type, Dynovar, 52 kV thru 312 kV | 1175 11/2/79 | To obtain experience |
| <u>McGraw-Edison</u> | | |
| Surge arrester, station class, metal oxide type VariSTAR 3 kV thru 192 kV Type ATZ1A | 1223 11/19/81 | To obtain experience |

*For instructions concerning application at substation refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af-1
April 1982

af - Cutouts, Distribution, Open

| <u>Manufacturer</u> | <u>Type</u> | <u>Voltage Rating</u> |
|---------------------|---|------------------------|
| Chance | C | 15, 27 kV |
| General Electric | 9F34 | 15, 27 kV |
| Joslyn | Series 2 | 15, 27 kV |
| Kearney | MX (with or without loadbreak accessory) | 15, 27 kV |
| McGraw-Edison | S1 | 15, 27 kV |
| S & C Electric | XS | 15, 27 kV |
| Southern States | Series 66 Series 70 | 15, 27 kV 15 kV |
| Westinghouse | NCX LBU-II | 15, 27 kV 15, 27 kV |

NOTE: The buyer should specify the load rating, voltage rating, interrupting rating and required accessories.

Cutouts used on underground riser poles should be load-break type or have hooks for portable load interrupters.

aj
April 1982

aj - Clamp, Ground Rod

| <u>Manufacturer</u> | <u>For 5/8"</u> <u>Copper-</u> <u>Covered Rod</u> | <u>For 3/4" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u> | <u>For 5/8" Galv.</u> <u>or Stainless</u> <u>Steel Rod</u> |
|---------------------|---|--|--|
| AMP | Copper AMPACT | - | - |
| | (Order by Description) | - | - |
| Anderson | GC-5 | - | - |
| Blackburn | G5 | - | - |
| Boggs | G31 | - | - |
| Burndy | GKP635 | - | - |
| C & R Products | CRGC-58 | - | - |
| Dossert | GNL62H | - | - |
| *Erico (Cadweld) | | | |
| 1 ground wire | GR1-161G | GR1-181G | GR1-161G |
| 2 ground wires | GR1-161G | GR1-181G | GR1-161G |
| Greaves/Mercury | G-580 | - | - |
| Ilsco | GRC-58 | - | - |
| Joslyn | J8392AB | R3459 | R3459 |
| Knight | C58 | UCSS | UCSS |
| Krueger & Hudepohl | 808 | - | - |
| Kortick | K4647 | - | - |
| O-Z Elec. Mfg. | BG0304 | - | - |
| Penn-Union | CEB-2 | - | - |
| Power Line Hardware | RC-58C | - | - |
| Reliable | E58 | 3459 | 3459 |
| UTM | 910-023-03 | 910-007-02 | 910-007-02 |
| Weaver | WB5/8 | - | - |
| Wilcor | HGR5/8 | - | - |

* Includes disposable molds.

Conditional List
aj
July 1981

aj - Clamp, ground rod

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|--|---------------------------------|-----------------------|
| <u>Kearney</u> 18457 ("Squeezon," 5/8 inch) | 467 5/6/52 | To obtain experience. |
| <u>Power Line Hardware</u> RC-34 (for 5/8" and 3/4") galvanized or stainless steel ground rod | 1114 5/12/77 | To obtain experience. |

al
April 1982

al - Staples, ground wire

| Length x Spread (inches) Diameter | 1½ x ¼ 9 Gauge <u>Galv. Steel</u> | 2 x ½ 8 Gauge <u>Galv. Steel</u> | 1½ x 3/8 8 Gauge <u>Copperweld</u> | 3 x 1-1/16 ¼ <u>Moulding</u> |
|---|---|--|--|------------------------------------|
| Blackburn | - | - | CUS9 | CUS22 |
| Chance | 7511-3/4 | 7512 | 9167 | 9161 |
| Copperweld | - | - | CP52 | - |
| Dixie | D-7514 | - | - | - |
| Joslyn | J1672G | J157 | J6652 | J6497 |
| Kortick | - | - | K247 | K236 |
| Larson | - | 1976-2 | 7652 | 75225 |
| Utilities Service | 88 | 86 | 48 | 46 |

Barbed staples, ground wire

| Length x Spread (inches) Diameter | 1½ x 3/8 .131 <u>Galv. Steel</u> | 2 x 5/8 .165 <u>Galv. Steel</u> | 1½ x 3/8 .140 <u>Copperweld</u> | 3 x 1-1//6 7/32 <u>Galv. Steel</u> |
|---|--|---------------------------------------|---------------------------------------|--|
| Joslyn | J7656 | J7672 | J7682 | J7664 |

Staples, alumoweld

| Length x Spread (inches) Diameter | 2 x ½ <u>8 gauge</u> | 1½ x 3/8 <u>8 gauge</u> | 3 x 1-1/16 <u>¼ moulding</u> |
|--------------------------------------|-------------------------|----------------------------|---------------------------------|
| Joslyn | - | J-6652AL | J-7493AL |

Clip, ground wire

| | |
|---------|-------|
| Kearney | 12326 |
|---------|-------|

Conditional List
al
July 1981

al - Staples, Ground Wire

Clip, Ground Wire

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|----------------------------------|---------------------------------|-----------------------|
| <u>Fastex (ITW)</u> No. 780-2 | 1038 4/4/74 | To obtain experience. |

an - Transformers, Power
Single-Phase, Step-Down
for Distribution Substation Use

Applicable Specification: REA Specifications for Step-Down Substation Transformers, S-3

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

All acceptance are based on standard impedances, taps, winding designs, materials and accessories. Variations should not be ordered except under special circumstances. Complete design tests should be specified for special designs.

| Primary Voltage-kV | kVA Capacity | | | | | | | | | |
|-----------------------|--------------|-----|-----|-----|-----|------|------|------|------|--------|
| | 167 | 250 | 333 | 500 | 833 | 1250 | 1667 | 2500 | 3333 | 5000 |
| | | | | | | | | | 6667 | 8333 |
| | | | | | | | | | | 10,000 |

Central Moloney

| | | | | | | | | | | |
|------|---|---|---|---|---|---|---|---|---|---|
| 34.4 | X | X | X | X | X | X | X | X | X | X |
| 43.8 | X | X | X | X | X | X | X | X | X | X |
| 67.0 | X | X | X | X | X | X | X | X | X | X |

General Electric

| | | | | | | | | | | |
|------|---|---|---|---|---|---|---|---|---|---|
| 34.4 | X | X | X | X | X | X | X | X | X | X |
| 43.8 | X | X | X | X | X | X | X | X | X | X |
| 67.0 | X | X | X | X | X | X | X | X | X | X |
| 115 | | | | | | | | | X | X |
| 138 | | | | | | | | | X | X |

Federal Pacific

| | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|---|
| 67.0 | | | | | | | | | | X |
|------|--|--|--|--|--|--|--|--|--|---|

an - Transformers, Power Single-Phase, Step-Down for Distribution Substation Use

[illegible]

McGraw-Hill Education

$$\begin{array}{r} 34.4 \\ 43.8 \\ 67.0 \\ \hline \end{array}$$

RTE-ASEA

$$\begin{array}{r} 43.8 \\ 34.7 \\ \hline \end{array}$$

Westinghouse

34.4
43.8
67.0
115

**an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use**

| Primary Voltage-kV | kVA | | | | | | MVA | | | | | | | |
|------------------------|-----|------|------|------|------|------|-----|-----|----|----|----|----|----|----|
| | 750 | 1000 | 1500 | 2000 | 2500 | 3750 | 5 | 7.5 | 10 | 12 | 15 | 20 | 25 | 30 |
| <u>Central Moloney</u> | | | | | | | | | | | | | | |
| 34.4 | X | X | X | X | X | X | X | X | | | | | | |
| 43.8 | X | X | X | X | X | X | X | X | X | | | | | |
| 67.0 | X | X | X | X | X | X | X | X | X | X | | | | |

| | | | | | | | | | | | | | | |
|-------------------------|---|---|--|---|---|---|---|---|---|---|---|---|---|---|
| <u>General Electric</u> | | | | | | | | | | | | | | |
| 34.4 | X | X | | X | X | X | X | X | X | X | X | X | | |
| 43.8 | X | X | | X | X | X | X | X | X | X | X | X | | |
| 67.0 | X | X | | X | X | X | X | X | X | X | X | X | X | X |
| 115 | | | | | | | X | X | X | X | X | X | X | X |
| 138 | | | | | | | X | X | X | X | X | X | X | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

| | | | | | | | | | | | | | | |
|----------------|--|--|--|---|---|---|---|---|---|---|---|---|--|--|
| <u>Kuhlman</u> | | | | | | | | | | | | | | |
| 34.4 | | | | X | X | X | X | X | X | X | X | X | | |
| 43.8 | | | | X | X | X | X | X | X | X | X | X | | |
| 67.0 | | | | X | X | X | X | X | X | X | X | X | | |
| 115 | | | | | | | X | X | X | X | X | X | | |
| 138 | | | | | | | X | X | X | X | X | X | | |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

| | | | | | | | | | | | | | | |
|------------------------|--|--|--|---|--|--|---|---|---|---|---|---|---|---|
| <u>Federal Pacific</u> | | | | | | | | | | | | | | |
| 67.0 | | | | X | | | X | X | X | X | X | X | | |
| 115 | | | | | | | X | X | X | X | X | X | X | X |
| 138 | | | | | | | X | X | X | X | X | X | X | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-546 load tap changers.

[illegible]

an - Transformers, Power
Single-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Transformers with 115 kV and 138 kV primary voltage ratings are acceptable with full BIL and with one step reduced BIL.

"X" indicates that acceptable test data have been furnished REA for this rating and for secondary voltages in either 15 kV or 25 kV class.

"s" indicates that performance specifications have been furnished REA and test data are to be submitted when available.

| Primary Voltage-kV | kVA Capacity | | | | | | | | | | | | |
|-----------------------|--------------|-----|-----|-----|-----|------|------|------|------|------|------|------|--------|
| | 167 | 250 | 333 | 500 | 833 | 1250 | 1667 | 2500 | 3333 | 5000 | 6667 | 8333 | 10,000 |

ESCO
34.4

X

X

X

General Electric

43.8
115

s

s

s

s

Hevi-Duty

34.4
43.8
67.0
115

s

s

s

s

s

s

s

s

s

s

s

s

s

s

Conditional List
an(2.1)
April 1982

an - Transformers, Power Single-Phase, Step-Down for Distribution Substation Use

Condition of Acceptance: To obtain experience.

[illegible]

Conditional List
 an(2.3)
 July 1981

an - Transformers, Power
 Single-Phase, Step-Down
 for Distribution Substation Use

Condition of Acceptance: To obtain experience.

Primary

Voltage-kV

167 250 333 500 833 1250 1667 2500 3333 5000 6667 8333 10,000

Westinghouse

34.4

43.8

67.0

S S S
 S S S
 S S S

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

| Primary Voltage-kV | kVA | | | | | MVA | | | | | | | |
|-----------------------|-----|------|------|------|------|------|---|-----|----|----|----|----|----|
| | 750 | 1000 | 1500 | 2000 | 2500 | 3750 | 5 | 7.5 | 10 | 12 | 15 | 20 | 25 |

Central Moloney
34.4

s

Federal Pacific
34.4
67.0

s s s
s s s

Transformers 5 MVA and larger also accepted as load tap changing transformers using Federal Pacific Type TC-546 load tap changers.

General Electric
34.4
43.8

s s
s s

115
138

s

Transformers 5 MVA and larger also accepted as load tap changing transformers using General Electric Types LR72, LR65 and LRT-200 load tap changers.

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

| Primary Voltage-kv | kVA | | | | | MVA | | | | | | | | | |
|-----------------------|-----|------|------|------|------|------|---|-----|----|----|----|----|----|----|--|
| | 750 | 1000 | 1500 | 2000 | 2500 | 3750 | 5 | 7.5 | 10 | 12 | 15 | 20 | 25 | 30 | |
| Hevi-Duty | | | | | | | | | | | | | | | |
| 34.4 | S | S | X | S | X | X | X | X | S | S | X | S | S | S | |
| 43.8 | S | S | S | S | S | X | X | X | X | X | X | S | S | S | |
| 67.0 | | | X | | X | X | X | X | X | X | X | X | S | S | |
| 115 | | | | | | X | X | X | X | X | X | X | S | S | |
| 138 | | | | | | | S | S | X | S | S | S | X | S | |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse Types UTS-A and UTT-B and Siemens-Allis Type TLS load tap changers.

| | | | | | | | | | | | | | | |
|---------------|---|--|---|--|--|--|--|--|--|--|---|---|---|---|
| McGraw-Edison | | | | | | | | | | | | | | |
| 34.4 | s | | s | | | | | | | | s | s | s | s |
| 43.8 | s | | s | | | | | | | | s | s | s | s |
| 67.0 | s | | s | | | | | | | | s | s | s | s |

Transformers 5 MVA and larger also accepted as load tap changing transformers using McGraw-Edison Types 550, 550B and 550C load tap changers.

| | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H. K. Porter (Delta-Star) | | | | | | | | | | | | | | |
| 34.4 | s | s | s | | s | X | X | X | s | | | | | |
| 43.8 | | | s | s | s | X | X | X | s | X | | | | |
| 67.0 | | s | X | s | X | X | X | X | X | X | X | | | |
| 115 | | | | | | X | X | X | s | X | X | | | |
| 138 | | | | | | | s | s | s | s | s | s | s | X |

Transformers 5 MVA and larger also accepted as load tap changing transformers using Siemens-Allis Types TLS and TLH-21 load tap changers.

an - Transformers, Power
Three-Phase, Step-Down
for Distribution Substation Use

Condition of Acceptance: To obtain experience.

| Primary Voltage-kV | kVA | | | | | | MVA | | | | | | | |
|-----------------------|-----|------|------|------|------|------|-----|-----|----|----|----|----|----|----|
| | 750 | 1000 | 1500 | 2000 | 2500 | 3750 | 5 | 7.5 | 10 | 12 | 15 | 20 | 25 | 30 |
| RTE | | | | | | | | | | | | | | |
| 34.4 | | | S | S | X | X | | | | | | | | |
| 43.8 | | | X | S | S | X | | | | | | | | |

RTE-ASEA

115
138
Transformers 5 MVA and larger also accepted as load tap changing transformers using RTE-ASEA
Type UZD load tap changers.

MGM
34.4
43.8
67.0

Transformers 5 MVA and larger also accepted as load tap changing transformers using Westinghouse
Types UTS-A and UTT-B load tap changers.

ao
July 1981

ao - Bolt, straight, thimble type eye

Applicable Specifications: Edison Electric Institute
Specification TD-4 1958,
"Specifications for Eye Bolts"

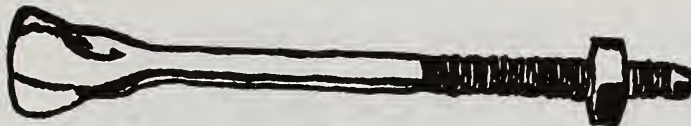
Applicable Sizes : 5/8 inch, 6 through 12 inch length
3/4 inch, 8 through 12 inch length

The following manufacturers have shown compliance with the applicable specifications:

A. B. Chance Company
Dixie Electrical Manufacturing Company

Joslyn Mfg. and Supply Company
Kortick Manufacturing Company
*McGraw-Edison

Utilities Service Company



*"Static proof" designs available.

ap-1
April 1982

ap - Clamp, hot line
Copper and Copperweld-copper Conductor

| <u>Conductor Size</u> | | | |
|-----------------------|---------------|-----------|-------------------|
| Copper | 2/0 | 1/0 | 2 thru 6 |
| Copperweld-copper | <u> </u> | <u>2A</u> | <u>4A thru 8A</u> |
| Blackburn | PGH3 | PGH3 | PGH3 |
| Fargo | GH-209 | GH-209 | GH-209 |
| Weaver | IWS | IWS | IWS |

Clamps listed below have springs and enclosed thread chambers.
They are recommended for use in areas where severe corrosion
or vibration trouble is experienced.

| | | | |
|----------------------|------------|------------|------------|
| Anderson | BH-00 | BH-00 | BH-00 |
| Chance | S1530CC | S1520CC | S1520CC |
| Electrical Specialty | BHC | BHC | BHC |
| Fargo | GH-100* | GH-100* | GH-100* |
| Ideal | 3532 | 3532 | 3532 |
| Penn-Union | HLC-020-LS | HLC-020-LS | HLC-020-LS |

*For use with CL Fuse, order GH-201

12 11/10/82

April 1982

be - Recloser, oil circuit
7.2/12.5 kV

Lexington
 Switch and
Controls

Single phase - Type HRL-50, ratings 5-50 amperes, maximum interrupting capacity 1250 amperes.
Single phase - Type HR4-100, ratings 25-100 amperes, maximum interrupting capacity 2000 amperes.
Single phase - Type HRL-280, ratings 25-100 amperes, maximum interrupting capacity 4000 amperes.

McGraw-Edison

Single phase - Type H, ratings 5-50 amperes, maximum interrupting capacity 1200 amperes.
Single phase - Type 4H, ratings 5-100 amperes, maximum interrupting capacity 2500 amperes.
Single phase - Type L, ratings 25-100 amperes, maximum interrupting capacity 4000 amperes.
Three phase - Type 3H, ratings 5-50 amperes, maximum interrupting capacity 1200 amperes.
Three phase - Type 6H, ratings 5-100 amperes, maximum interrupting capacity 2500 amperes.
 *Three phase - Type RX, ratings 25-400 amperes, maximum interrupting capacity 6000 amperes.
 *Three phase - Type W, ratings 100 to 560 amperes, maximum interrupting capacity 10,000 amperes.
 *#Three phase - Type RXE, rating 400 amperes, maximum interrupting capacity 6000 amperes.
 *#Three phase - Type WE, rating 560 amperes, maximum interrupting capacity 10,000 amperes.
 *#Three phase - Type ME, ratings 560 or 1120 amperes, maximum interrupting capacity 16,000 amperes.

14.4/24.9 kV

McGraw-Edison

Single phase - Type E, rating 5-100 amperes, maximum interrupting capacity 2500 amperes. Available with shunt lockout solenoid for three-phase operation.
 *#Three phase - Type RVE, rating 400 amperes, maximum interrupting capacity 6000 amperes.
 *#Three phase - Type MVE, rating 560 amperes, maximum interrupting capacity 12,000 amperes.
 *Three phase - Type WV, rating 560 amperes, maximum interrupting capacity 8000 amperes.
 *#Three phase - Type WVE, rating 560 amperes, maximum interrupting capacity 8000 amperes.

*Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip device.

#Not acceptable with load current, bushing CT battery chargers.

be-2
July 1981

be - Reclosers, vacuum interrupter
7.2/12.5 kV

McGraw-Edison

*#Three phase - Type VSA, ratings
100 - 560 amperes

* Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

#Not acceptable with load current, bushing CT battery chargers.

Conditional List

be(1)

April 1982

be - Recloser, oil circuit
7.2/12.5 kV

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---------------------------------------|---------------------------------|---------------------------------|
| <u>*Lexington Switch and Controls</u> | | |
| Three phase oil circuit | 808 | To obtain operating experience. |
| recloser, 50, 100 and 280 | 1/7/65 | |
| ampere frames, Type HR-3 | 1087(4/1/76) | |
| <u>*Westinghouse</u> | | |
| Three phase oil circuit | | To obtain operating experience. |
| recloser (Shunt trip with | | |
| static or relay type | | |
| controls) | | |
| Type ES-400 (15-400 amperes) | 1070 | |
| Type ES-560 (15-560 amperes) | 7/24/75 | |
| Type ESM-560 (100-560 amperes) | | |
| Type ES-105 (15-560 amperes) | 1077(11/13/75) | |

* Ratings greater than 100 amp. for 7.2/12.5 kV application, and greater than 200 amp. for 14.4/24.9 kV application, are acceptable only with ground trip devices.

Conditional List
be(2)
April 1982

be - Recloser, oil circuit

| <u>Manufacturer</u> | <u>Meeting No and Date</u> | <u>Conditions</u> |
|---------------------------------------|--------------------------------|------------------------------------|
| <u>*Lexington Switch and Controls</u> | | |
| Oil circuit recloser, | 620 | To obtain operating experience. |
| 14.4/24.9 kV | 4/18/57 | |
| Single phase-HR1, | 1080 | |
| rated 100 amperes | 12/23/75 | |
| Three phase-HR3, | | |
| rated 100 amperes | | |
| <u>McGraw-Edison</u> | | |
| *#Three phase - Type CXE | 883 | To obtain operating experience. |
| Rated 560 amperes for 34.5 kV | 12/14/67 | |
| *#Three phase - Type CVE | 883 | To obtain operating experience. |
| rated 560 amperes for 46 kV | 12/14/67 | |
| *Single phase - Type 4E | 977 | To obtain operating experience. |
| 14.4/24.9 kV | 10/14/71 | |

*Ratings greater than 100 amp. for 7.2/12.5 kV application, and
greater than 200 amp. for 14.4/24.9 kV application, are acceptable
only with ground trip devices.

#Not acceptable with load current, bushing CT battery chargers.

Conditional List
bz
July 1981

bz - Switch, oil

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|-----------------------------|---------------------------------|--------------------------|
| <u>McGraw-Edison</u> | | |
| Capacitor oil switch | 940 | To obtain experience. |
| Type TSC, 38 kV max. | 4/2/70 | |
| 100 ampere capacitor switch | | |
| 300 ampere load switch | | |
| Oil switch with | 1046 | 1. To obtain experience. |
| 125 kV BIL accessory | 7/25/74 | |
| Type NR, 15 kV, single- | | 2. For use on single- |
| phase, remote electric | | phase taps of |
| control, 200 amp. at | | 14.4/24/9 kV multi- |
| 75 to 100 percent power | | grounded wye systems. |
| factor. | | |

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

| Manufacturer | Acceptable Mounting on Structure | Tilting Ins. Type kV | Vertical Break Type kV | Side Break Type kV | Center Break Type kV | Double Break Type kV |
|------------------------------|--|-------------------------|---------------------------|-----------------------|-------------------------|-------------------------|
| | | | | | | |
| Brown Boveri Elec. (ITE) | Horizontal | 3ST 15-34.5 | TTR6 15-161 | | | |
| A. B. Chance | Horizontal Phase over Phase Vertical | | | D2, D3(L) 15-34.5 | | |
| | | | | D2, D3(L) 15-34.5 | | |
| | | | | D2, D3(L) 15-34.5 | | |
| Johnson | Horizontal | | VIP 15-230 | LS 15-69 | M 15-230 | |
| Joslyn (Hi-Voltage) | Horizontal | | RF-2(VL) 15-230 | RB-1(VL) 15-25 | | |
| | Horizontal | | | RB-1* 15-115 | | |
| Kearney | Horizontal | NE-2 15-34.5 | AR 60-P 15-69 | | | |
| MEMCO | Horizontal | AgF 15-69 | EA 15-345 | | EE 69-230 | |
| | Horizontal | AgC 15-69 | | | | |
| H. K. Porter (Delta-Star) | Horizontal | | MK-40 15-69 | PMB-40A 15-69 | LPC 69-230 | |
| Powerdyne (Kearney) | Horizontal Phase over Phase | | | | V2-V4 15-230 | |
| | | | | | V2 15-23 | |
| ANIXTER Royal | Phase over Phase Horizontal | | | RG-63(L) 15-69 | | |
| | | | | RSL-L(L) 15-69 | | |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

* These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

| Manufacturer | Acceptbale Mounting on Structures | Tilting Ins. | | Vertical Break | | Side Break | | Center Break | | Double Break | |
|-----------------|---|--------------|----|-------------------|--------|-----------------|------------------|--------------|---------|-------------------|----|
| | | Type | kV | Type | kV | Type | kV | Type | kV | Type | kV |
| S & C | Horizontal | | | Alduti(L)15-34.5 | | Alduti(L)15-25 | | | | Alduti(L)34.5-46 | |
| | Phase over Phase | | | Alduti(L)15-25 | | Alduti(L)15-25 | | | | Alduti(L)34.5-46 | |
| | Vertical | | | Alduti(L)*15-34.5 | | Alduti(L) 15-25 | | | | Alduti(L)*34.5-46 | |
| SEECO | Phase over Phase | | | | | GOABS(VL)15-69 | | | | | |
| | Horizontal | | | H1 | 15-230 | S | 15-69 | | | | |
| Siemens-Allis | Horizontal | | | TA(VL) | 15-69 | SSB-T | 15-69 | CCB | 115-230 | | |
| | | | | | | | | CBL-2 | 115-230 | | |
| Southern States | Horizontal | | | WAG | 15-230 | 57K | 15-69 | | | | |
| | | | | | | | | | | | |
| Turner | Phase over Phase | | | | | (1D,2D,3D)(VL) | 15-161 | | | | |
| | Horizontal | | | | | 1D(VL) | 15-161 | | | | |
| USCO | Horizontal | | | AGT(VL)**15-230 | | GSH-4(VL)15-138 | AGCH** 15-345 | | | | |
| | Horizontal | | | | | | AGCH-V**34.5-230 | | | | |
| | Phase over Phase | | | | | GSH-4(VL)15-138 | GCH 15-23 | | | | |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

* These switches, except 34.5 kV Alduti vertical break, are available and accepted in combination with the S & C Type SMD substation fuse cutouts listed on page af-3.

**Also available in bronze in some ratings.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated

(Not Suitable for Substation Use)

| <u>Manufacturer</u> | <u>Acceptable Mounting</u> | <u>Vertical Break</u> | | <u>Side Break</u> | | <u>Center Break</u> | |
|------------------------|----------------------------|-----------------------|-----------|-------------------|-----------|---------------------|-----------|
| | | <u>Type</u> | <u>kV</u> | <u>Type</u> | <u>kV</u> | <u>Type</u> | <u>kV</u> |
| Chance | Horizontal | | | D2,D3(L) | 15-34.5 | | |
| | Phase-over-phase | | | D2,D3(L) | 15-34.5 | | |
| | Vertical | | | D2,D3(L) | 15-34.5 | | |
| K-P-F | Horizontal | SV-202 | 23 | A202-A208 | 15-110 | | |
| | Phase-over-phase | | | A202 | 15-23 | | |
| | Phase-over-phase | | | W202 | 15-23 | | |
| | Phase-over-phase | | | MD202 | 15-23 | | |
| Powerdyne (Kearney) | Horizontal | | | S | 15-23 | V2 | 15-23 |
| | Phase-over-phase | | | S | 15-23 | V2 | 15-23 |

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cp
April 1982

cp - Deadend, Compression Type

ACSR

| <u>Conductor Size</u> | <u>Alcoa</u> | <u>Anderson/Sq. D</u> |
|---------------------------|--------------|-----------------------|
| 1/0 | Order by | VCD-50R |
| 2/0 | Conductor | thru |
| 3/0 | Size and | VCD-61R |
| 4/0 | Stranding | " |
| 266.8 kcmil 26/7 | 2-piece | VCD-831-1-RM |
| 336.4 kcmil 26/7 | alloy | VCD-831-1-RM |
| 477 kcmil 26/7 | compression | VCD-832-2-RM |
| 556.5 kcmil 26/7 | " | VCD-833-3-RM |
| 795 kcmil 26/7 | " | VCD-835-4RM |
| 954 kcmil 54/7 | " | VCD-835-4RM |

| <u>Conductor Size</u> | <u>Burndy</u> | <u>Fargo(Alcan)</u> | <u>Kearney</u> | <u>Somerset/Homac</u> |
|---------------------------|---------------|---------------------|----------------|-----------------------|
| 1/0 | Type Y-W | | 104000 | Order by |
| 2/0 | " | | thru | Conductor |
| 3/0 | " | | 104000-03 | Size and |
| 4/0 | " | | " | Stranding |
| 266.8 kcmil 26/7 | " | SEDA-1109 | 104000-05 | " |
| 336.4 kcmil 26/7 | Type YTW | SEDA-1309 | thru | " |
| 477 kcmil 26/7 | " | SEDA-1809 | 104000-14 | " |
| 556.5 kcmil 26/7 | " | SEDA-2209 | " | " |
| 795 kcmil 26/7 | " | SEDA-3309 | | |
| 954 kcmil 54/7 | " | SEDA-4121 | | |

ACSR
Adjustable

Somerset/Homac

Order by conductor size and stranding.

Aluminum Alloy
(6201 and 5005)

Conductor Size:

4 thru 4/0

Anderson/Sq. D

Type VOD, Order by conductor size.

Copper

Conductor Size:

2 x 3

4

6

National Tel. Supply

71-258/3X

71-204-P

71-162-J

Copperweld-Copper

Conductor Size:

6A

8A

National Tel. Supply

71-6A-P

71-8A-P

Conditional List
cp
July 1981

cp - Deadend, compression type

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---------------------|---------------------------------|-----------------------|
| <u>Burndy</u> | | |
| AWAC 4-4/3 | 1050 | To obtain experience. |
| YTW7M10T | 9/19/74 | |
| AWAC 2-4/3 | | |
| YTW7M9T | | |
| AWAC 1/0-4/3 | | |
| YTW7M7T | | |

cu
April 1982

cu - Brace, crossarm, wood

| | | |
|--|-----------|-----------|
| Span, inches | 60 | 60 |
| Drop, inches | <u>18</u> | <u>30</u> |
| Aluma-Form | 6018 | 6030 |
| American Crossarm & Conduit Company | 220 | 225 |
| Brooks Lumber Company | 44680 | 44681 |
| Dis-Tran | DT-60 | DT-601 |
| Hatheway Patterson | 16018 | - |
| Hughes | 2045-CC | 2045-D |
| Joslyn | J23339 | J23623 |
| Utilities Structures Engineering Incorporated | CU-60-18 | CU-60-30 |

Braces listed below have 26-inch hole spacing. They are interchangeable with the flat steel braces listed on page h.

| | |
|-----------------------------|-------|
| Aluma-Form | AF626 |
| American Crossarm & Conduit | 600 |
| Brooks Lumber Company | 58128 |
| Dis-Tran | DT-28 |
| Hatheway Patterson | 7026 |
| Hughes | 2023 |
| Joslyn | J5526 |

Brace, crossarm, fiber reinforced plastic

| | |
|-------------|--------|
| Continental | CRB-28 |
| Joslyn | RP-26 |
| Plastigage | CAB-28 |
| Shakespeare | 533 |

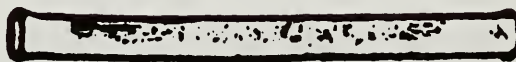
CX
July 1981

cx - Splice, oval tube

| <u>Conductor Size:</u> | <u>4</u> | <u>2</u> | <u>ACSR</u> | <u>1/0</u> | <u>2/0</u> |
|------------------------|----------|----------|-------------|------------|------------|
|------------------------|----------|----------|-------------|------------|------------|

| <u>Conductor Size:</u> | <u>0 x 7</u> | <u>2 x 3</u> | <u>Copper</u> | <u>4</u> | <u>6</u> |
|------------------------|--------------|--------------|---------------|----------|----------|
| MEMCO | 63 | 62 | | 58 | 56 |
| National Tel. Supply | 464 | 463 | | 459 | 457 |

| <u>Conductor Size:</u> | <u>Copperweld-Copper</u> | <u>6A</u> | <u>8A</u> |
|------------------------|--------------------------|-----------|-----------|
| MEMCO | | 170 | 168 |
| National Tel. Supply | | 460 | 459 |



cy-1
April 1982

cy - Splice, Compression
ACSR

| <u>Conductor Size</u> | <u>Alcoa</u> | <u>Anderson/ Sq. D</u> | <u>Burndy</u> |
|---------------------------|--------------|----------------------------|---------------|
| 4 6/1 | 2-piece | VC-36R | "Unisplice" |
| 4 7/1 | Order | VC-36R | (1-piece) |
| 2 6/1 | by | VC-36R | or Y-S |
| 2 7/1 | Conductor | VC-36R | (2-piece) |
| 1/0 | Size | VC-50R | Order by |
| 2/0 | and | VC-50R | Conductor |
| 3/0 | Stranding | VC-61R | Size and |
| 4/0 | " | VC-61R | Stranding |
| 266.8 kcmil 26/7 | 2-piece | VC-831-1-RM | 2-pc. |
| 336.4 kcmil 26/7 | Compression | VC-831-1-RM | Type YTS |
| 477 kcmil 26/7 | Alloy (Order | VC-832-2-RM | " |
| 556.5 kcmil 26/7 | by Conductor | VC-833-3-RM | " |
| 795 kcmil 26/7 | Size and | VC-835-4RM | " |
| 954 kcmil 54/7 | Stranding) | VC-835-4RM | " |

| <u>Conductor Size</u> | <u>Fargo</u> | <u>ITT Blackburn</u> | <u>Kearney</u> <u>2 pc.</u> | <u>1 pc.</u> |
|---------------------------|--------------|--------------------------|--------------------------------|--------------|
| 4 6/1 | | Type RC | | OH4-61-71AS |
| 4 7/1 | | 1-piece | | OH4-61-71AS |
| 2 6/1 | | Order | | OH2-61-71AS |
| 2 7/1 | | by | | OH2-61-71AS |
| 1/0 | | Conductor | OH1/0-61A | OH1/0-61AS |
| 2/0 | | Size | OHR2/0-61A | |
| 3/0 | | and | OHR3/0-61A | |
| 4/0 | | Stranding | HR4/0-61A | |
| 266.8 kcmil 26/7 | TJA-1109 | Type DT | HR-266-267A | |
| 336.4 kcmil 26/7 | TJA-1309 | 2-piece | HR-336-267A | |
| 477 kcmil 26/7 | TJA-1809 | for | HR-477-267A | |
| 556.5 kcmil 26/7 | TJA-2209 | kcmil sizes | HR-556-267A | |
| 795 kcmil 26/7 | TJA-3309 | | | |
| 954 kcmil 54/7 | TJA-4121 | | | |

| <u>Conductor Size</u> | <u>Nat. Tel. Supply</u> | <u>Somerset/ Homac</u> |
|---------------------------|-----------------------------|----------------------------|
| 4 6/1 | "Nicopress" | "Tension |
| 4 7/1 | (1-pc. or 2-pc.) | splicer" |
| 2 6/1 | Order by Conduc- | (1-piece or |
| 2 7/1 | tor Size and | 2-piece) |
| 1/0 | Stranding | Order by |
| 2/0 | 2-pc. | Conductor |
| 3/0 | " | Size and |
| 4/0 | " | Stranding |
| 266.8 kcmil 26/7 | " | 2-pc. |
| 336.4 kcmil 26/7 | " | " |
| 477 kcmil 26/7 | " | " |
| 556.5 kcmil 26/7 | " | " |
| 795 kcmil 26/7 | | |
| 954 kcmil 54/7 | | |

cy-1.1
July 1981

cy - Splice, Compression

Copper and Copperweld-Copper

| <u>Conductor Size</u> | <u>Anderson/ Sq. D.</u> | <u>Burndy</u> | <u>Kearney</u> | <u>Nat. Tel. Supply</u> |
|---------------------------|-----------------------------|---------------|----------------|-----------------------------|
| 6 cu | VCC-28 | YDS6W | OH6C | 1-162/J |
| 4 cu | VCC-28 | YDS4W | OH4C | 1-204/P |
| 2 x 3 cu | - | YDS2C-3 | OH2-3CX | 1-258/3X |
| 0 x 7 cu | - | YDS25 | OH1-7C | 1-325/7F6 |
| 8A CWC | VCC-28 | YDS8KT | OHR8ACW | 1-8A-P |
| 6A CWC | VCC-28 | YDS6KT | OHR6ACW | 1-6A-P |
| 4A CWC | VCC-37 | YDS4KT | OHR4ACW | 1-4A-X |
| 2A CWC | VCC-43 | - | - | - |

| <u>Conductor Size</u> | <u>Somerset/ Homac</u> |
|---------------------------|----------------------------|
| 6 cu | J2C3 |
| 4 cu | L2C5 |
| 2 x 3 cu | S2C7 |
| 0 x 7 cu | U2C9 |
| 8A CWC | L2E1 |
| 6A CWC | L2E3 |
| 4A CWC | Q2E5 |
| 2A CWC | U2E7 |

ea - Insulator, post type

DISTRIBUTION

| | | | |
|--------------------|-----------|-----------|-----------|
| System voltage, kV | 7.2/12.5 | 7.2/12.5 | 14.4/24.9 |
| Leakage, inches | 7½ | 10 | 15 |
| Flashover, dry, kV | 65 | 70 | 95 |
| Flashover, wet, kV | <u>40</u> | <u>50</u> | <u>65</u> |

Chance

Insulator only - order

stud separately (Aluminum
base, also available with
malleable iron base)

| | | |
|-----------|-----------|-----------|
| C903-1900 | C903-1901 | C903-1902 |
|-----------|-----------|-----------|

Lapp

7" Stud
1-3/4" Stud

| | | |
|-------|-------|-------|
| 4415P | 4420P | 4427P |
| 4315P | 4320P | 4327P |

Ohio Brass

7" Stud
1-3/4" Stud

| | |
|------------|------------|
| 43400-7040 | 43401-7040 |
| 43400-7010 | 43401-7010 |

TRANSMISSION

| | | | |
|--------------------|-----------|------------|------------|
| System voltage, kV | 22 | 34.5 | 46 |
| EEI-NEMA Class | 57-2 | 57-3 | 57-4 |
| Flashover, dry, kV | 110 | 125 | 150 |
| Flashover, wet, kV | <u>85</u> | <u>100</u> | <u>125</u> |

Chance

Insulator only - order
stud separately

| | |
|-----------|-----------|
| C903-1002 | C903-1003 |
|-----------|-----------|

Lapp

7" Stud
1-3/4" Stud

| | | |
|-------|-------|-------|
| 9435P | 9445P | 9455P |
| 9335P | 9345P | 9355P |

Ohio Brass

7" Stud
1-3/4" Stud

| | | |
|------------|------------|------------|
| 37620-7040 | 41640-7040 | 41650-7040 |
| 37620-7010 | 41640-7010 | 41650-7010 |

NOTE: Post insulators (Item ea) may be substituted for the crossarm pin (Item f) and pin insulator (Item a) for both small and large conductor distribution drawings shown in REA Forms 803 and 804 at the option of the owner.

ea-2
July 1981

ea - Insulators, horizontal post type

| <u>Manufacturer</u> | <u>34.5 kV</u> | <u>69 kV</u> | <u>115 kV</u> |
|-----------------------------|----------------|--------------|---------------|
| Brown Boveri Electric (ITE) | 62356 | - | - |
| Lapp | F-4745 | F-4788 | F-70147 |
| Ohio Brass | 43740 | 43790 | 47043 |

gj
July 1981

gj - Crossarm Assemblies and Arm Spacers

Distribution

Wood crossarm assembly complete with braces
and attaching hardware, fittings and bolts

Crossarm Assembly

| <u>Manufacturer</u> | <u>Crossarm Size</u> (inches) | <u>Catalog No.</u> |
|---------------------|--|--------------------|
| Hughes Brothers | $3\frac{1}{2}$ x $4\frac{1}{2}$ x 8'-0" | 2890A |
| | $3\frac{3}{4}$ x $5\frac{3}{4}$ x 8'-0" | 2890B |
| | $3\frac{3}{4}$ x $7\frac{3}{4}$ x 8'-0 | 2892-A |
| | $3\frac{3}{4}$ x $7\frac{3}{4}$ x 10'-0" | 2892-B |

Twin Arm Spacer*

To be used with standard hardware, 8' x $3\frac{5}{8}$ " x $4\frac{5}{8}$ " crossarm
and 28" wood braces

Flagg

PX240

*Restricted to applications where the conductor's maximum design
tension is less than 1250 lbs. and to conductor sizes 1/0 ACSR and
below.

gw-1
April 1982

gw - Crossarm Assembly for H-Frame Construction

Applicable Specification: REA Specification T-7, Revision dated
November 1962
Applicable Drawing : TH-11B Series (161 kV maximum)
No braces (TH-11B)
Two vee braces on outside (TH-11BVO)
Two vee braces on inside (TH-11BVI)
Four vee braces (TH-11BV4)

3-5/8" x 9-3/8" x 33' wood crossarm assembly complete
with attaching hardware, fittings, bolts and 3-3/8" x
5-3/8" braces.

Catalog Nos. or Drawing Nos.

| | <u>TH-11B</u> | <u>TH-11BVO</u> | <u>TH-11BVI</u> | <u>TH-11BV4</u> |
|--|--------------------|---------------------------|---------------------------|---------------------------|
| (Assemblies) | <u>Items</u> gw | <u>Items</u> gw and vo | <u>Items</u> gw and vi | <u>Items</u> gw and vv |
| American Crossarm and Conduit Co. (1) | 70250 | 7025VO | 7025VI | 7025V4 |
| Brooks Lumber (1,2) | 6411 | 6411-1 | 6411-2 | 6411-3 |
| Cascadian (1,2) | CCC11B72 | CCC11B72-VO | CCC11B72-VI | CCC11B72-V4 |
| Hughes Brothers (1,2) | C3316-B | C3316-B | C3316-B | C3316-B |

- 1 - Fixed spacer fitting sizes as required
- 2 - Adjustable spacers are available

gw-2
April 1982

gw - Crossarm Assembly for H-frame Construction
(Double Arm) 230 kV (Small Angle)

Applicable Specification: REA Specification T-8
Drawing : TH-231B

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 2-3/8"

| <u>Manufacturer</u> | <u>Catalog No.</u> |
|---------------------------------|--------------------|
| American Crossarm & Conduit (1) | 8026VB |
| Brooks (1,2) | 64231 |
| Cascadian (1,2) | CCC231B82 |
| Hughes (1,2) | C-3338-B |
| Koppers (1) | REA-230B |

Crossarm 5-1/8" x 7-1/2"

| | |
|--------------|-----------|
| Hughes (1,2) | C-3338-BL |
|--------------|-----------|

- 1 - Fixed spacer fitting sizes as required.
- 2 - Adjustable spacers are available.

gx-1
January 1982

gx - Single Pole Steel Structures with Arms

Applicable Specification: REA Specification for Single Pole Steel
Structures Complete with Arms, T-9

Manufacturer

Meyer

Single circuit,
delta conductor
arrangement - Type 1
Single circuit,
vertical conductor
arrangement - Type 2
Double circuit conductor
arrangement - Type 3
Single circuit, large angle
arrangement - Type 4

Union Metal

Single circuit,
delta conductor
arrangement - Type D
Single circuit,
vertical conductor
arrangement - Type E
Double circuit conductor
arrangement - Type H
Single circuit, large angle
arrangement - Type K

April 1982

**gy - Crossarm Assembly for H-frame Construction
(Double Arm)**

Applicable Specification: REA Specification T-7, Revision dated
November 29, 1962

Applicable Drawing : TH-10 Series
No braces (TH-10)
Two vee braces on outside (TH-10VO)
Two vee braces on inside (TH-10VI)
Four vee braces (TH-10V4)

3-5/8" x 9-3/8" x 32' wood crossarm assembly complete with
attaching hardware, fittings, bolts and 3-3/8" x 5-3/8"
braces.

Catalog Nos. or Drawing Nos.

| | <u>TH-10</u> | <u>TH-10VO</u> | <u>TH-10VI</u> | <u>TH-10V4</u> |
|--|--------------|----------------|----------------|----------------|
| | <u>Items</u> | <u>Items</u> | <u>Items</u> | <u>Items</u> |
| (Assemblies) | gy | gy and vo | gy and vi | gy and vv |
| American Crossarm & Conduit Company (1) | 70208 | 70228 | 702281 | 70248 |
| Brooks Lumber (1,2) | 6410 | 6410-1 | 6410-2 | 6410-3 |
| Cascadian (1,2) | CCC1071 | CCC1071-VO | CCC1071-VI | CCC1071-V4 |
| Hughes Brothers (1,2) | C-3316-A | C-3316-A | C-3316-A | C-3316-A |
| Niedermeyer-Martin(1) | N-6710 | N-6711 | N-6712 | N-6713 |

- 1 - Fixed spacer fitting sizes as required
- 2 - Adjustable spacers are available

gy-2
April 1982

gy - Crossarm Assembly for H-frame Construction
(Double Arm) 230 kV (Tangent)

Applicable Specification: REA Specification T-8
Drawing : TH-230

Assembly complete with attaching hardware, fittings, bolts and braces.

Crossarm 3-5/8" x 3-3/8"

| <u>Manufacturer</u> | <u>Catalog No.</u> |
|---------------------------------|--------------------|
| American Crossarm & Conduit (1) | 8025V4 |
| Brooks (1,2) | 64230 |
| Cascadian (1,2) | CCC23081 |
| Hughes (1,2) | C-3338-A |
| Koppers (1) | REA-230S |
| Niedermeyer-Martin (1) | N-6720 |

Crossarm 5-1/8" x 7-1/2"

| | |
|--------------|-----------|
| Hughes (1,2) | C-3338-AL |
|--------------|-----------|

- 1 - Fixed spacer fitting sizes as required.
- 2 - Adjustable spacers are available.

U fz-1
April 1982

U fz - Transformer Connector Block, Insulated

Multiple Cable Connectors

Watertight - For use in all locations.

| <u>Manufacturer</u> | <u>Connection Type</u> | <u>Catalog Number</u> |
|---------------------|------------------------|--|
| Utilco | Set Screw | PTF-SS, Watertight Insulated transformer Connector block |

Non-Watertight - For use in above grade locations only

| | | |
|------------------------|-------------------------------|---|
| Alcoa | Lug | Interchange 1 ABBD Series (Disconnectable) Use with A9 insulating boots |
| Alcon | Set Screw | VBTT Series with double sealing sleeve |
| Burndy | Lug | Stud Mole |
| Electrical Spec. Prod. | Lug Lug | Type SU (Permanent) Types SUR and RDSR (Removable) (With Types LA and A1 lugs and sleeve kits) |
| | Set Screw | Type UPS-I (Permanent) Type UPM-I (Disconnectable) |
| Fargo | Bolted Set Screw | GUC Series GUS-200S Series |
| Homac | Lug Lug | DF Series FTU 125 Series (Disconnectable) with flood seal sleeve kit |
| | Set Screw | UT-R Series |
| ITT | Lug Set Screw Set Screw | SCU, with lugs and sleeves TSB-J58C (Permanent) TSB-D58C (Disconnectable) |
| Penn Union | Lug Lug | Type DBAT-LH (Disconnectable) Use with Series DBTB, DBTBF and DBTH lug and sleeves kits |
| Reliable | Set Screw | 15912-REA (Disconnectable) |
| RTE | Set Screw Set Screw | Uni-Joint (Disconnectable) Uni-Joint (Permanent) |
| Utilco | Set Screw Set Screw | PTF-IN (Permanent) PTF-IN-J (Disconnectable) |

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

U fz-2
October 1981

U fz - Transformer Connector Block, Insulated
Single Cable Connectors

Non-Watertight - For use in above grade locations only

Manufacturer

Catalog Number

Electrical Spec. Prod

Type SM transformer bushing
connector kit. (Stud to
aluminum cables through
350 kcmil)

NOTE: Additional insulation may be required with some of the above-listed secondary terminal blocks due to the irregularity of mating surfaces between various secondary studs being supplied by the transformer manufacturers.

Conditional List
U gk(1.1)
July 1981

U gk - Terminations, Outdoor
(With mounting hardware)*

(When ordering specify conductor size, type, whether
copper or aluminum, insulator diameter, and type
of mounting desired)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|-------------------------------|---------------------------------|-----------------------|
| <u>Elastimold (ESNA)</u> | | |
| Style 16-THG (15 and 25 kV) | 921(6/26/69) | To obtain experience. |
| Style 35-MT (35 kV) | 945(6/11/70) | |
| | 1098(9/23/76) | |
| <u>General Electric</u> | | |
| Termi-Matic, Type G | 938(3/5/70) | To obtain experience. |
| (15, 25 and 35 kV) | 914(3/20/69) | |
| | 1083(2/5/76) | |
| <u>Joslyn</u> | | |
| "Easy-On II" | 1111 | To obtain experience. |
| (15, 25 and 35 kV) | 3/31/77 | |
| <u>3M</u> | | |
| 5900 Series | 966 | To obtain experience. |
| 15 kV (4/0 AWG and larger) | 5/6/71 | |
| 25 kV (#2 AWG thru 750 kcmil) | 969 | |
| "Quick-Term" 5800 Series | 6/17/71 | |
| bracket mounted, | 1054 | |
| 15 kV (#2 AWG thru 3/0 AWG) | 11/27/74 | |
| MT Series | | |
| 15 kV (4/0 AWG and larger) | 1083 | |
| 25 kV, 35 kV | 2/5/76 | |
| "Quick-Term II" Series | 1170 | |
| 15 kV (#2 AWG thru 4/0 AWG) | 8/23/79 | |
| <u>ITT Blackburn</u> | | |
| Type MP (15, 25 and | 1043(6/13/74) | To obtain experience. |
| 35 kV) | 1166(6/21/79) | |

*Mounting hardware is used to attach termination to mounting bracket
(U hd or U hj).

Conditional List

U gk(1.2)

April 1982

U gk - Terminations, Outdoor
(With Mounting Hardware)*

(When ordering specify conductor size, type, whether
copper or aluminum, insulation diameter, and type
of mounting desired)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|--|--------------------------------------|-----------------------|
| <u>Raychem</u> Thermofit HVT (15, 25 and 35 kV) | 1054 11/27/74 | To obtain experience. |
| <u>Bishop</u> SWO Kit (15, 25 & 35 kV) | 1109 3/3/77 | To obtain experience. |
| <u>G & W</u> "Slip-on Dry" 15 kV, SD-7 25 kV, SD-8 35 kV, SD-9 | 1150(11/2/78) 1166 6/21/79 | To obtain experience. |
| <u>RTE</u> Fasterm Series (15 & 25 kV) | 1162 4/26/79 | To obtain experience. |
| <u>Sigmaform</u> Q-Cap Series STK (15 & 25 kV) | 1212 5/21/81 | To obtain experience. |

*Mounting hardware is used to attach termination to mounting bracket
(U hd or U hj).

Conditional List
U gk(2)
April 1982

U gk - Terminations, Indoor

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|-----------------------|
| <u>Elastimold (ESNA)</u> Style 35-MS (15, 25 & 35 kV) | 945(6/11/70) 1116(6/9/77) | To obtain experience. |
| <u>General Electric</u> Termi-Matic, Type A or G (15, 25 & 35 kV) | 914(3/20/69) 1083(2/5/76) | To obtain experience. |
| <u>ITT Blackburn</u> Type SKD Stress Cone (15, 25 & 35 kV) | 1043 6/13/74 | To obtain experience. |
| <u>Raychem</u> Thermofit HVT (15, 25 & 35 kV) | 1054 11/27/74 | To obtain experience. |
| <u>3M</u> MT Series (15, 25 & 35 kV) | 1054(11/27/74) 1083(2/5/76) | To obtain experience. |
| <u>Bishop</u> Stress-Wrap (15, 25 & 35 kV) | 1109 3/3/77 | To obtain experience. |
| <u>RTE</u> Fasterm Stress Cone (15 & 25 kV) | 1162 4/26/79 | To obtain experience. |
| <u>Sigmaform</u> Q-Cap Series STK-I (15 & 25 kV) | 1212 5/21/81 | To obtain experience. |

Conditional List
U gn(1)
July 1981

U gn - Enclosures, equipment

Applicable Specifications: "REA Specifications for Equipment Enclosures,"
U-4

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|-------------------------------|---------------------------------|-----------------------|
| <u>Pad-Mounted</u> | | |
| <u>Continental Columbus</u> | | |
| E/L100 | 969 | To obtain experience. |
| (For use with dead-front | 6/17/71 | |
| pole-type transformers - see | 1080 | |
| Item an) | 12/23/75 | |
| <u>Durham</u> | | |
| Series 4242 (dead-front) | 966 | To obtain experience. |
| Series 5454 (dead-front) | 5/6/71 | |
| Series 3452 (dead-front) | 1078(11/26/75) | |
| <u>Electrical Equipment</u> | | |
| TH1-DF Series (dead-front) | 975(9/16/71) | To obtain experience. |
| <u>Inter-Alloys</u> | | |
| 3636-DF-SP | 1052 | To obtain experience. |
| 4242-DF-SP | 10/31/74 | |
| 5454-DF-SP | 1133 | |
| 6666-DF-SP | 2/16/78 | |
| 7272-DF-SP | | |
| <u>Malton Electric</u> | | |
| 1-Phase Single Unit | 978 | To obtain experience. |
| (dead-front) | 10/28/71 | |
| <u>McGraw-Edison</u> | | |
| EH12E DF-REA | 994 | To obtain experience. |
| EH13E DF-REA | 6/29/72 | |
| EH16E DF-REA | 1119 | |
| EH17E DF-REA | 7/28/77 | |
| EH18E DF-REA | | |
| EH22E DF-REA | | |
| <u>Western Power Products</u> | | |
| FG-DF1 (dead-front) | 966 | To obtain experience. |
| FG-DF3 (dead-front) | 5/6/71 | |

NOTE: The above enclosures are available with various multipoint terminations. The owner should specify termination points to be provided.

Conditional List
U hb(1.2)
April 1982

U hb - Cable Accessories
(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|-----------------------|
| Burndy 15 kV, used with loadbreak connectors Type LBIC152 Insulating Cap | 1227 1/21/82 | To obtain experience. |
| 25 kV, used with loadbreak connectors Type LBIC252 Insulating Cap | | |

Conditional List

U hb(2)

July 1981

U hb - Cable Accessories

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|-----------------------|
| <u>Elastimold (ESNA)</u> | | |
| 15 kV, used with non-loadbreak connectors 600, 650 Series | 1016 5/10/73 | To obtain experience |
| 25 kV, used with non-loadbreak connectors K600, K650 Series | | |
| 35 kV, used with non-loadbreak connectors 750LR Series | 1064 5/1/75 | |
| <u>RTE</u> | | |
| 15 kV, VBT Tee connector No. 2604360B Series | 1126 11/3/77 | To obtain experience. |
| 15 kV, Protective cap No. 2625041A01 | | |
| <u>ITT Blackburn</u> | | |
| 15 kV, used with non-loadbreak connectors Types 6B and 65B | 1131 1/19/78 | To obtain experience |
| 25 kV, used with non-loadbreak connectors Types 6C and 65C | | |
| <u>Burndy</u> | | |
| 15 kV, used with non-loadbreak connectors PES86/PSS86 | 1197 10/9/80 | To obtain experience |
| 25 kV, used with non-loadbreak connectors PES86--S/PSS86--S | | |

U he - Enclosures, Sectionalizing Equipment

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---|-----------------------|
| | <u>7.2/12.5 kV</u> | |
| <u>McGraw-Edison</u> EH3A Series, single- phase, pad-mounted | 1065 5/15/75 | To obtain experience. |
| <u>Malton</u> MEF21 | 1108 2/17/77 | To obtain experience. |
| <u>S & C</u> Mark III, Models PMS (with option G-7) 200 ampere three-pole switching and 200 ampere single-pole switching | 1112 4/14/77 1198 10/23/80 1202 12/18/80 | To obtain experience. |
| <u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 300 amp | 1151 11/16/78 | To obtain experience. |
| <u>G & W</u> PLDR, PFLDR (submersible and pad-mounted) single-phase and three-phase, fused or unfused switchgear. (Choice of deep well or deadbreak bushings) (must specify pentahead security bolt when ordering) | 1200 11/20/80 | To obtain experience |

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List
U he(2)
January 1982

U he - Enclosures, Sectionalizing Equipment

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|--|---------------------------------|-----------------------|
| | <u>14.4/24.9 kV</u> | |
| <u>Elliott</u> Type EPMR, single- and three-phase, pad-mounted | 1030 11/21/73 | To obtain experience. |
| <u>Gerard</u> Mod-Brk 6-125 and 6-325 Series, single- and three-phase pad-mounted | 1047 8/8/74 | To obtain experience. |
| <u>Powercon</u> Type PMF, single-phase pad-mounted Type PMF, three-phase pad-mounted | 998 8/17/72 | To obtain experience. |
| <u>RTE</u> Type LBS, single- and three-phase, pad- mounted, 300 amp | 1095 8/11/76 | To obtain experience. |
| <u>Inter-Alloys</u> Uni-Versal single- and three-phase pad-mount fusible switchgear and loadbreak switches Series UV-FL | 1133 2/16/78 | To obtain experience. |
| <u>Westinghouse</u> UTE, PAD-PAK pad-mounted switching device, single and three-phase, 200 amp | 1151 11/16/78 | To obtain experience. |

NOTE 1: Enclosures on this page must comply with the dead-front requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List
U hp(2)
July 1981

U hp - Terminations, Elbow*

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|-----------------------------|---------------------------------|-----------------------|
| <u>General Electric</u> | | |
| 15 kV, Loadbreak | 930 | To obtain experience. |
| Elbow connector module | 10/30/69 | |
| 9U01 Series | | |
| 25 kV | 1016 | |
| 9U01BAA Series (Loadbreak | 5/10/73 | |
| with voltage test point) | | |
| 9U01BBA Series (Loadbreak | | |
| without voltage test point) | | |
| <u>ITT Blackburn</u> | | |
| 15 kV, Loadbreak | 981(12/16/71) | To obtain experience. |
| T2B (without test | | |
| point) | | |
| T2BT (with test point) | 981(12/16/71) | |
| 15 kV, Non-loadbreak | 1037 | |
| TN2BT (with test point) | 3/21/74 | |
| 25 kV, Non-loadbreak | | |
| T2CT (with test point) | | |
| TN2CT (with test point) | | |

*NOTE: Non-loadbreak devices require that connections be made in non-energized conditions only.

For application of loadbreak elbows on three-phase systems, refer to
REA Bulletin 61-15 dated June 1974.

Conditional List
U hp(3)
April 1982

U hp - Terminations, Elbow*

(When ordering specify conductor size, type, whether
copper or aluminum and insulation diameter)

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|------------------------------------|---------------------------------|-----------------------|
| RTE | | |
| 15 kV Loadbreak SBT IV | 1122 | To obtain experience. |
| 2604000B Series with test point | 9/8/77 | |
| 2603999B Series without test point | | |
| 15 kV Non-loadbreak | 1148 | |
| 2625166B Series | 9/28/78 | |
| 2625175B Series | | |
| 2525175B Series | | |
| 25 kV Loadbreak SBT | 1032 | |
| 2604381B Series with test point | 12/20/73 | |
| 2604400B Series without test point | | |
| 35 kV Loadbreak SBT | 1048 | |
| 2603922B Series with test point | 8/22/74 | |
| 2604006B Series without test point | | |

*NOTE: Non-loadbreak devices require that connections be made in non-energized conditions only.

For application of loadbreak elbows on three-phase systems,
refer to REA Bulletin 61-15 dated June 1974.

Conditional List

U ja(1)

April 1982

U ja - Transformer Pad

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|-----------------------------------|-----------------------|
| <u>Carolina Dielectrics</u> Model 0502-1 Fiberglass Size: 40" x 44" | 1000 9/14/72 | To obtain experience. |
| <u>Chance</u> C107-0162 and C107-0171 Fiberglass Size: 40" x 44" | 994 6/29/72 | To obtain experience. |
| <u>Heil Rotomold, Inc.</u> T Series* High density polyethylene | 1228 2/4/82 | To obtain experience. |
| <u>Highline</u> HL-46B, Fiberglass Size: approx. 42" x 42" | 989 4/13/72 | To obtain experience. |
| <u>Plastic Structures</u> No. 40402012 Molded polyethylene Size: 40" x 40" | 997 7/27/72 | To obtain experience. |
| <u>Thermodynamics</u> Poly-Pad, PR Series* Molded polyethylene | 998(8/17/72) & 1009(2/1/73) | To obtain experience. |
| <u>Carlton</u> Composolite - PH Series | 1141 6/15/78 | To obtain experience |
| <u>Cyclo</u> Dwg. No. 730126-2 Molded polyethylene Size: 42" x 42" | 1147 9/14/78 | To obtain experience |
| <u>Associated Plastics</u> API 4000 Series RPM | 1191 7/24/80 1194 9/4/80 | To obtain experience |

*Order by catalog number and size.

Conditional List
U ja(1.1)
July 1981

U ja - Transformer Pad

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|--|---------------------------------|-----------------------|
| <u>Power Line Hardware</u> T-4242 Molded polyethylene Size: 42" x 42" | 1158 3/1/79 | To obtain experience. |
| <u>Formex</u> Model TP-REA Molded polyethylene | 1159 3/15/79 | To obtain experience. |
| <u>Major Frame-Crete</u> ETPP precast cellular concrete 42" x 42" | 1166 6/21/79 | To obtain experience. |
| <u>Smith Cattleguard</u> Easi Set T. Series Precast Reinforced Concrete | 1187 5/22/80 | To obtain experience |

Conditional List

U sd

July 1981

U sd - Current Transformers

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|--|---------------------------------|-----------------------|
| <u>Sangamo</u> | | |
| Current transformers, direct burial, 600 v. | 940 4/2/70 | To obtain experience. |
| Type KU-6 | | |
| Type K2U-6 | | |
| Type GU-6 | | |
| Type HU-6 | | |

U si-1
April 1982

U si - Anodes, Sacrificial
(Drawings UML1-1, UM-26, UM27, M2-7)

Zinc Anodes*

| | <u>Pre-Packaged With Connecting Wire</u> | | | <u>Bare Continuous Strip (Ribbon)</u> | |
|---------------------------|--|---------------|---------------|---------------------------------------|---------------------|
| | <u>12 lbs</u> | <u>30 lbs</u> | <u>60 lbs</u> | <u>5/8" x 7/8"</u> | <u>1/2" x 9/16"</u> |
| Federated Metals | S-12 packaged | S-30 packaged | S-60 packaged | Regular size Type II | Junior size |
| Harco | AZC12GJ | AZC30GJ | AZC60HJ | | |
| General Corrosion Service | 12HII-4A | 30HII-4A | 60HII-4A | | |

*When ordering, specify zinc anodes that meet ASTM B418-73 Type II Composition and REA Specification DT-9, "REA Specification for Zinc Sacrificial Anodes."

U si-2
April 1982

U si - Anodes, Sacrificial
(Drawings UM-11-1, UM-26, UM-27, M2-7)

Magnesium Anodes**

| | | <u>Standard Potential</u> | | | | <u>High Potential</u> | | | |
|----------------------------|--------------|---------------------------|----------------|----------------|-------------------------|-----------------------|-------------------------|-------------------------|----------------|
| | | <u>17 lbs.</u> | <u>20 lbs.</u> | <u>32 lbs.</u> | <u>50 lbs.</u> | <u>17 lbs.</u> | <u>20 lbs.</u> | <u>32 lbs.</u> | <u>48 lbs.</u> |
| Federated Metals | 17 packaged | | | 32 packaged | 50 packaged | | | | |
| Harco | AMC17J | AMC20J | AMC32J | AMC50J | AMC17G | AMC20G | AMC32G | AMC48G | |
| Kaiser Mag. | 17 Vibra Pak | | 32 Vibra Pak | 50 Vibra Pak | 17 Electromag Vibra Pak | | 32 Electromag Vibra Pak | 50 Electromag Vibra Pak | |
| General Corrosion Services | 17 packaged | | 32 packaged | 50 packaged | 17D3 packaged | 20D2 packaged | 32D5 packaged | 48D5 packaged | |

**When ordering, specify magnesium anodes that meet REA Specification DT-10,
"REA Specification for Magnesium Sacrificial Anodes."

Conditional List
GP(6)
July 1981

GP - Watthour Meter Test Sets

| <u>Manufacturer</u> | <u>Meeting No. and Date</u> | <u>Conditions</u> |
|---|---------------------------------|-----------------------|
| <u>Knopp, Inc.</u> "Uniload" Portable Test Set FS-8 | 1005 12/7/72 | To obtain experience. |

GP-7
April 1982

RESISTANCE TESTS SETS

| | <u>Type</u> | <u>Description</u> | <u>Group*</u> |
|----------------------|-------------|---|---------------|
| Associated | 255A | Ground resistance | IV |
| Research | 263A | meter (vibroground) | IV |
| | 2101A | Ohmmeter, insulation resistance tester | IV |
| Biddle | 21159 | Ohmmeter, insulation resistance tester | IV |
| Chance (Hipotronics) | | | |
| | C417 Series | Ohmmeter, insulation resistance tester | IV |

*U.S. GOVERNMENT PRINTING OFFICE : 1982 O- 522-013/4062

*Refer to "Part III - General Plant Items" for explanation of groups.